

OH reactivity and experimental OH budget in Wangdu (North China Plane) in summer 2014

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OH reactivity was measured via pump and probe technique and direct detection of OH radicals by laser-induced fluorescence during a four week-long campaign in Wangdu in summer 2014. Wangdu is a small city located approximately 170 km south-west from Beijing in the North China Plane. A large set of instruments measured together to characterize regional photochemistry. Gas-phase measurements included species to experimentally determine the production and destruction rates of OH radicals and inorganic and organic species to compare direct measured OH reactivity with the sum of reactivity from single species. OH reactivity median values ranged between 10 and 20 s⁻¹ during daytime with slightly higher values during the first part of the campaign. Overall, contributions of measured single compounds to the total OH reactivity can explain nearly 80% of the measured OH reactivity. During the second part of the campaign, the entire measured OH reactivity is explained by measured concentrations of OH reactants. Similarly, the sum of OH production rates calculated from measurements is balanced by the OH destruction rate during this time. In contrast, the OH destruction rate is approximately 20-30% larger than the sum of OH production rates during noontime and in the afternoon during the first part of the campaign.